Vascular Plant Species List Project: COLM Herbarium Review and Species List for Colorado National Monument (COLM)

Final Report

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INTRODUCTION

This project is part of the Northern Colorado Plateau Inventory and Monitoring Network's (NCPN) ongoing effort to develop verifiable vascular plant species lists for parks in the network.

Project Objectives

As described in the Cooperative Agreement between NPS and the University of Colorado Herbarium, the overall goals of this project are to:

1) Review and annotate herbarium specimens for COLM.
2) Assist with compilation of NPSpecies database for COLM vascular plant species.
3) Prepare a technical report (per NCPN requirements) documenting project results, including a narrative summary of the history of botanical work at COLM.
4) Develop a narrative describing floristic study/plant collection history for Black Canyon of the Gunnison National Park (BLCA) and Curecanti National Recreation Area (CURE).

Goals 1 and 2 are discussed below in the METHODS section. Goal 3 is accomplished with this report. Goal 4 was completed with a report entitled "History of Botanical Surveys in Black Canyon of the Gunnison National Park and Curecanti National Recreation Area", submitted to NPS in November, 2005.

Nomenclature

On the recommendation of NPS botanists, the primary nomenclature used was Weber and Wittmann's, Colorado Flora: Western Slope [3rd Ed.] (2001), the most commonly used flora in Colorado.

HISTORY OF BOTANICAL WORK IN THE MONUMENT

The majority of specimens documenting the flora of COLM were collected by Dr. William A. Weber of the University of Colorado Museum Herbarium and his students and colleagues. He began these efforts soon after his arrival in Colorado in 1948, with an increase of activity in the early 1980's (see below).

Another collector with a number of specimens in the NPS herbarium at COLM is Phil Hackney, perhaps a park employee in the mid-1970's.

Prior to the initiation of this herbarium review, we contacted Dr. Walt Kelly at Mesa State College, who informed us that due to permit restrictions he had not collected at the Monument, nor were there specimens from COLM in the small herbarium at Mesa State.

Finally, Steve Popovich, botanist with the Arapaho-Roosevelt National Forest, informed the cooperators that as a NPS seasonal in 1984, he and a female employee (whose name he couldn't

recall), collected hundreds of specimens from the Monument. According to Popovich, she took the specimens with her when she left to go to Dinosaur National Monument. We checked with Tamara Naumann at Dinosaur, who reported that no specimens from COLM were in the Dinosaur herbarium. These specimens may exist somewhere in the NPS system, and could be new vouchers for COLM.

We are not aware of any collections made from the Monument since the work of Weber et al. in the early 1980's. Undoubtedly, new species would be documented for the Monument with further inventory effort.

The following is an excerpt from the "Checklist of Vascular Plants of Colorado National Monument" summarizing work in the area prior to 1985 (Weber et al. 1985).

> Mesa County was the first area on the Western Slope of Colorado to be seriously studied by a professional botanist, Alice Eastwood, in the 1890's. Later, G.E. Osterhout of New Windsor, collected around Grand Junction and DeBeque in the early 1900's, and Francis Ramaley, plant ecologist at the Univ. of Colorado, collected on Grand Mesa in 1936. H.D. Harrington collected in Mesa County in the late 1940's.
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> My [W.A. Weber] collecting in Mesa County began with trips with my botany students from the University of Colorado on annual May weekends. We received very cordial treatment from the Colorado National Monument personnel, and during the first few years I created their herbarium from collections made on these visits. As the years passed, I extended this interest and help to include the Black Canyon National Monument, which at that time was part of the same administrative unit. During this time Pat Miller was very active in making additions to the Park floras, and together we produced a rough catalog of the plants of the Monuments.
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> My student, Claudia Rector, carried on wetland studies in the Colorado River Valley, developed an interest in aquatic plants, and settled permanently in Grand Junction, where she also became deeply involved in the work of the National Park Service. She encouraged me to complete the survey of the plants of Mesa County and the National Monument, and her place became headquarters for our field parties.
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> In compiling the County flora, we realized ... we had slighted the Grand Mesa. We needed to collect the area in depth, and fortunately, just at that time a new colleague [Vlad Siplivinsky] appeared on the scene ... . In 1981 with Claudia and Walt Rector's help, we were able to give him an entire summer collecting on the Grand Mesa.
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> In 1982 the Colorado National Monument asked us to make a "final" survey of the plants of the Monument. Their grant enabled Vlad and my herbarium assistant, Hans Beck, to spend a week each month through the entire summer, exploring the area for plants which had been missed previously. This was a very productive opportunity, which is reflected in a large number of additions to the park list. Plants collected during this survey have been added to the Park herbarium.

METHODS

Herbarium Review

In the autumn of 2005, the cooperators brought the NPS Herbarium specimens from Colorado National Monument (COLM) to the University of Colorado Herbarium (COLO) for review. Conducting the work in this location facilitated the process, by having access to the entire COLO collection for reference, which includes duplicates of many of the NPS vouchers collected by W.A. Weber and colleagues.

Prior to initiating the specimen review, the Northern Colorado Plateau Network (NCPN) provided the cooperators with an Excel spreadsheet containing electronic data on each specimen housed at the NPS Herbarium at COLM. These data were obtained from the Automated National Catalog System (ANCS+) database. Based on experience from other parks these data typically have a high error rate, so the spreadsheet was compared to the NPS specimens and numerous discrepancies were edited.

NCPN data management staff merged this corrected database with a database of specimens from COLM housed at the University of Colorado Herbarium provided by the cooperators. The merger of these two databases resulted in a relatively accurate list of species vouchered from COLM.

Over a three-month period the cooperators examined the 1,023 specimens and annotated them with labels either confirming or correcting the previous identification. In the course of this annotation task, identifications of some COLO specimens were also corrected. Once the identifications and annotations were complete, 442 taxa were vouchered for the Monument.

Completion of NPSpecies Database

The NPSpecies Database comprises species known to occur (vouchered) or potentially occurring in the Monument, along with fields indicating each species' park status, abundance, and nativity.

Potentially occurring species were added to the list in two stages. The first step was to go through the list of all species from Mesa County that are vouchered at the University of Colorado Herbarium (University of Colorado Museum Herbarium, 2006). Each of these species not already vouchered for COLM was evaluated for likelihood of occurring in the Monument based on suitable habitat and geographic proximity. The second step was to go through the "Checklist of Vascular Plants of Colorado National Monument" prepared by Dr. William A. Weber et al. in 1985. This list included species "to be expected" in Weber's opinion. We added most, but not all, of these to the potential list. Weber has considerable familiarity with the Monument and its habitats, but we judged several species he listed to be very unlikely to occur.

Due to the cooperators lack of field experience in COLM, and after consultation with NCPN staff, abundance status for all taxa was entered as "unknown".

The final number of taxa in the NPSpecies Database is 660, which includes 442 vouchered taxa (67%) and 218 potential taxa (33%). The total number of voucher specimens in the NPSpecies Database is 1,844 – with 1,023 specimens in the NPS Herbarium and 821 in the University of

Colorado Herbarium. Of these, 1,493 are confirmed within the Monument, 303 are unknown, and 48 are outside, but near the boundary. These latter 351 specimens represent potential species in the Monument.

LITERATURE CITED

University of Colorado Museum Herbarium. 2006. Specimen Database of Colorado Vascular Plants. [http://cumuseum.colorado.edu/Research/Botany/Databases/search.php].

Weber, William A., V. Siplivinsky, H. Beck, and C. Rector. 1985. Checklist of Vascular Plants of Colorado National Monument.

Weber, William A. & Ronald C. Wittmann. 2000. Catalog of the Colorado Flora-electronic version. [http://cumuseum.colorado.edu/Research/Botany/Databases/vascular_plants.pdf]

Weber, William A. & Ronald C. Wittmann. 2001. Colorado Flora: Western Slope [3rd Ed.]. University Press of Colorado.